A large increase in the nitrogen content of soils resulted from the addition of active bacterized peat as compared with controls of the same soils with sterile peat. It was found that an aqueous extract of bacterized peat supplied all of the plant food necessary for water cultures of tomato, barley, and buckwheat seedlings. It was also found that bacterized peat contains a substance or substances that stimulate growth and enables the plants to utilize the normal mineral food constituents (NH_3, P_2O_5, and K_2O) more readily. It is supposed that in nature these growth-stimulating substances are supplied by the decayed organic matter of the soil. Experiments under way are reported to indicate that during the early stages of the growth of the embryo these substances are supplied from the seed.

The results of these experiments with bacterized peat coordinate well with agricultural practice as observed by the reviewer in the Puget Sound region of the United States. In this region sphagnum bogs are readily converted into productive gardens by drainage and cultivation. This growth-stimulating substance (or substances) is soluble in water and in alcohol and is precipitated by phosphotungstic acid. Very little has been determined as to the nature or composition of these growth-stimulating substances, but they are said to resemble in certain ways the accessory food bodies concerned in animal nutrition—GEORGE B. RIGG.

Some Ontario forest conditions.—In order to obtain some exact data regarding the extent and conditions of their forests, the Commission of Conservation of Canada has had surveyed among other regions a portion of Ontario east of Georgian Bay and north of Lake Ontario. The area is within the basin of the Trent River and comprises some 1,345,000 acres, slightly rolling in character, with a very thin soil over the recently glaciated granitic rocks of Archaean and Ordovician age. HOWE[21] reports that two-thirds of this area was originally covered with a more or less pure white pine forest, the remainder being chiefly of hard wood type, in which beech and maple predominated. Now the virgin forest is practically gone, although on account of the poor quality of the scanty soil less than 12 per cent of the area has been farmed and little more is tillable.

In discussing present conditions, four types of forest are recognized. (1) The pure coniferous forest with less than 10 per cent of other trees is made up of *Pinus Strobus* with a small quantity of *Tsuga canadensis*. It occupies less than 5 per cent of the woodland and is now hardly known in virgin condition. (2) The pure hard wood forest contains less than 10 per cent of coniferous trees and occupies the deeper soils, covering about 33 per cent of the forested area. It is composed of *Acer saccharum*, *Fagus grandifolia*, *Betula lutea*, *Tilia americana*, and a few other minor species. From the predominance of the two species first named, both as mature trees and as seedlings, it is evident that this

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[21] HOWE, C. D., and WHITE, J. H., Trent watershed survey. Commission of Conservation, Canada. pp. 156. *ills.* 16. *maps* 3. 1913.

represents the climax forest of the region. (3) Then comes a mixed forest occupying only some 6 per cent of the wooded area and made up partly of a combination of the previously mentioned types and partly of a swamp type in which *Fraxinus nigra*, *Thuja occidentalis*, and *Abies balsamea* are dominant. (4) Finally, there are areas formerly mostly pine forests, but repeatedly burned after cutting and now occupied by a pioneer association dominated by *Populus tremuloides* and *Betula alba*. It comprises some 56 per cent of the forested area, occupying the thin soils over the granitic or crystalline rocks or the deeper sandy plains and sandy ridges. While potentially pine forest areas, these poplar-birch forests are usually so entirely without pine that only by a system of planting could they be brought to their original richly productive condition.

HOWE reviews at some length the economic loss involved in the forest fires so prevalent in the past and still occurring annually over this region, and shows the true economy of the preventive measures he recommends.

A discussion of the economic and industrial conditions by WHITE and an introduction by FERNOW both show the futility of attempting agriculture in a region so little suited to crop production, and the great importance of having it organized into a forest reserve under government control with scientific supervision.

The illustrations, the excellent index, and the mapping of the distribution of the forest types described all add to the value of the report.—GEO. D. FULLER.

Paleobotanical notes.—SEWARD[22] has published an account of the antarctic ("Terra nova") fossil plants collected by the British Antarctic Expedition of 1910, being the first of the geological memoirs completed. A general account of the various expeditions to this region is given, followed by a description of the paleobotanical material secured, much of it being too fragmentary for certain identification. Among the descriptions are two new genera, obtained from what are probably Mesozoic beds: *Antarcticoxylon* (presumably the stem of a gymnosperm) and *Pityosporites* (thought to be a winged pollen grain of some gymnosperm). Various remains of *Glossopteris* were also identified, and the occurrence of this genus in the antarctic regions suggests a general discussion of the wide uniformity of climatic conditions during the later Paleozoic.

SEWARD,[23] in another paper discussing the Wealden floras, calls attention to the surprising similarity in the general appearance of the floras of Japan, South Africa, North America, South America, Europe, and the Arctic regions. "In the Wealden period the type of vegetation was very similar to that which flourished through the greater part of the world during the whole of the Jurassic,

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[22] SEWARD, A. C., Antarctic fossil plants. British Museum, Brit. Antarctic Exped. 1910. Geol. **1**:1–49. *pls. 1–8.* 1914.

[23] ———, Wealden floras. Hastings and East Sussex Nat. **2**:126–142. *pl. 2.* 1914.